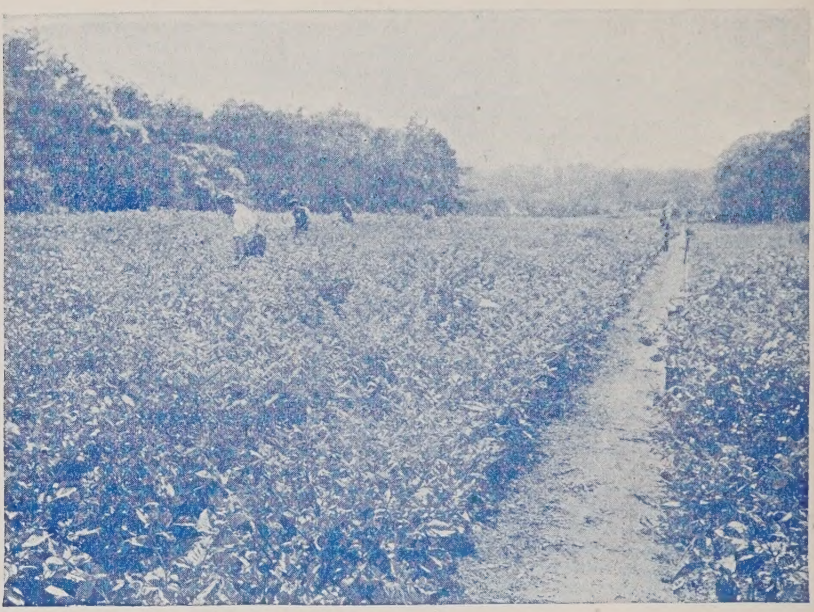
BRITISH
ALKALOIDS
AND
FINE
CHEMICALS



A FIELD OF BELLADONNA *(Atropa belladonna)*

Atropa belladonna is grown from selected seed. The best crops of leaves are obtained in the second, third, or fourth year of the plant's growth, and it is at this period that the alkaloidal content is greatest.

HARVESTING OF BELLADONNA

The yield ranges from 1-1/2 to 5 tons per acre. The freshly-cut herb is weighed in bundles and carried straight to the laboratories in a motor van.

Reproduced from photographs taken on the 'Wellcome' Materia Medica Farm, and developed with 'Tabloid' 'Rytol' Universal Developer, which was originated by Burroughs Wellcome & Co., and is manufactured entirely by them in England.

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OVER a long period of years it has been one of the aims of Burroughs Wellcome & Co. to preserve and bring back to the British Empire the chemical industry which was fast slipping away. Achievements in this direction have been considerable, and they are now bearing ripe fruit for medicine and pharmacy in times of crisis and need.

Great Britain and the Chemical Industry

A few examples have been selected to indicate how scientific research has been utilised to win economic victories which supplement the nation's work on the field of battle. Many products previously supplied chiefly by alien enemies were manufactured by Burroughs Wellcome & Co. before the war; others have been produced since, and still others are in course of preparation.

ALKALOIDS AND THEIR SALTS

For a number of years a large variety of alkaloids and their salts have been manufactured at the 'Wellcome' Chemical Works, Dartford, England.

In preparing these alkaloids in the highest attainable degree of purity, the collaboration of the Wellcome Chemical and Physiological Research Laboratories, and the Experimental Department of the 'Wellcome' Chemical Works has been secured, whilst the resources of the 'Wellcome' Materia Medica Farm have been utilised to the fullest extent. So far back as 1900, a complete investigation of the alkaloids

Results of scientific research

of Jaborandi (J. C. S., 1900, Vol. 77, pp. 473, 851, etc.) enabled the Firm to present Pilocarpine Nitrate in an ultimate state of purity—a fact which was guaranteed by the melting point being stated on each package. The standard then set for the melting point of this salt has been adopted for the British Pharmacopœia, 1914. The previous issue of the latter authority, in 1898, contained no reference to the melting point for this salt, and other authorities have been content with a much lower melting point and consequent standard of purity.

Pilocarpine

Similar researches (J. C. S., 1906, Vol. 89, pp. 357, etc.) and work conducted at the 'Wellcome' Materia Medica Farm, have resulted in the issue of the mydriatic alkaloids Atropine, Hyoscyamine, Hyoscine and Homatropine in a state of unexcelled purity.

Mydriatic alkaloids

As another noteworthy instance of pioneer work on the same lines, may be mentioned an investigation of the alkaloids of Calabar Beans (J. C. S., 1911, Vol. 99, pp. 2148, etc.) and the issue, by the Firm, of Physostigmine (Eserine) and its important salts—Sulphate, Hydrobromide and Salicylate—in a perfect condition of chemical purity.

Physostigmine

One of the latest achievements is the elucidation of the chemistry of the alkaloids of Ipecacuanha (J. C. S., 1914, Vol. 105, pp. 1591, etc.) and the production and issue of salts of Emetine, for the first time, in a state of complete purity, free from the accompanying alkaloids of Ipecacuanha—Cephæline and Psychotrine. Further, the establishment of the constitutional relationship between Emetine and Cephæline in the Experimental Department of the 'Wellcome' Chemical Works has led to the production by the Firm of synthetic Emetine (British patents Nos. 14677 and 17483, of 1913).

Ipecacuanha and synthetic Emetine

The very great difficulties attending the production of Cocaine to satisfy the high standard demanded, have been overcome, and British-made Cocaine and Cocaine Hydrochloride are now obtainable for the first time.

British Cocaine

PREPARATIONS

'WELLCOME' Brand—

,, **Atropine** *(Pure Alkaloid)*, B.P.
Bottles of gr. 60, oz. 1/4 and oz. 1

,, **Atropine Sulphate, B.P.**
Bottles of gr. 60, oz. 1/4 and oz. 1

,, **Cocaine** *(Pure Alkaloid)*, B.P.
Bottles of oz. 1/8, oz. 1/2 and oz. 1

,, **Cocaine Hydrochloride, B.P.**
Bottles of oz. 1/8, oz. 1/2 and oz. 1

,, **Emetine** *(Pure Alkaloid)*
Tubes of 1 gramme
Bottles of gr. 60

,, **Emetine Hydrobromide**
Tubes of 1 gramme
Bottles of gr. 60

,, **Emetine Hydrochloride**
Tubes of 1 gramme
Bottles of gr. 60

,, **Homatropine** *(Pure Alkaloid)*
Tubes of gr. 5

,, **Homatropine Hydrobromide, B.P.**
Tubes of gr. 5

,, **Homatropine Methylbromide, B.P.**
Tubes of gr. 5

,, **Hydrastine** *(Pure Alkaloid)*
Tubes of 1 gramme
Bottles of oz. 1

,, **Hydrastine Hydrochloride**
Tubes of 1 gramme
Bottles of oz. 1

'WELLCOME' Brand—

,, **Hyoscine Hydrobromide, B.P.**
Tubes of 1 gramme
Bottles of gr. 60

,, **Hyoscyamine** *(Pure Alkaloid)*
Tubes of gr. 5 and 1 gramme

,, **Hyoscyamine (dextro-Hyoscyamine)**
Tubes of gr. 5
Bottles of 1 gramme

,, **Hyoscyamine Sulphate, B.P.**
Tubes of gr. 5 and 1 gramme

,, **Physostigmine** *(Pure Alkaloid)*
Tubes of gr. 2 and gr. 5

,, **Physostigmine Hydrobromide** *(Eserine Hydrobromide)*
Tubes of gr. 5 and 1 gramme

,, **Physostigmine Salicylate** *(Eserine Salicylate)*
Tubes of gr. 5 and 1 gramme

,, **Physostigmine Sulphate** *(Eserine Sulphate)*, B.P.
Tubes of gr. 1/2, gr. 1, gr. 2 and gr. 5

,, **Pilocarpine Hydrochloride**
Tubes of 1 gramme
Bottles of gr. 60, oz. 1/2 and oz. 1

,, **Pilocarpine Nitrate, B.P.**
Tubes of 1 gramme
Bottles of gr. 60, oz. 1/2 and oz. 1

,, **Sparteine Sulphate**
Bottles of gr. 60 and oz. 1

We reserve the right to reduce or refuse orders for unusual quantities

HEXAMINE
(Hexamethylenetetramine)

Hexamethylenetetramine is official in the forthcoming 1914 edition of the British Pharmacopœia, under the term Hexamine, and is now manufactured at the 'Wellcome' Chemical Works, Dartford, England, on a large scale. Hexamine so prepared is 100% purity, the standard of the new British Pharmacopœia being only 98%.

100% purity

Originally employed as a genito-urinary antiseptic, it has now a much wider field of application, owing to the discovery of its appearance in the cerebro-spinal fluid soon after administration.

Hexamine exerts a powerful antiseptic action in chronic cystitis, pyuria, etc., in which conditions the urine should be rendered acid by the simultaneous administration of 'Tabloid' Sodium Acid Phosphate.*

Cystitis, pyuria, etc.

Many other uses suggest themselves and are described in a special leaflet obtainable from Burroughs Wellcome & Co. on request.

'Tabloid' Hexamine (Hexamethylenetetramine), gr. 3 (0·194 gm.); and gr. 5 (0·324 gm.). Issued in oval bottles of 25 and in bottles of 100.

The 'Tabloid' product provides a reliable and convenient means of administering accurate doses of hexamine of exceptional purity.

DIRECTION.—One to three of the 'Tabloid' products taken dissolved in plain or aerated water. During treatment the patient should be induced to drink copious draughts of water, either plain or carbonated.

GLYCEROPHOSPHATES

The Glycerophosphates afford another example of the successful collaboration of the Firm's research and technical staff. The question of the composition of the Glycerophosphates has been for many years the subject of investigation and controversy at the hands of a considerable number of workers, and very varying and opposite views have been held. Further, the salts on the market have shown enormous variations

* 'TABLOID' SODIUM ACID PHOSPHATE, gr. 10, for use with Hexamine when it is necessary to render alkaline urine acid, is supplied to the medical profession, in oval bottles of 25.

in composition and properties, and have not agreed in these respects with such semi-official standards as have been published. Only recently, however, has the question been thoroughly elucidated as the result of an investigation in the Experimental Department of the 'Wellcome' Chemical Works, where an extended examination into the composition and properties of the pure salts was undertaken (J. C. S., 1914, Vol. 105, p. 1238). The result of this has been the technical production by the Firm of salts of definite composition and properties, and of the highest purity.

PREPARATIONS

'WELLCOME' Brand—

,, Calcium Glycerophosphate

,, Iron Glycerophosphate

,, Magnesium Glycerophosphate

,, Potassium Glycerophosphate

,, Sodium Glycerophosphate

In bottles of oz. 1 and oz. 4

'TABLOID' Brand—

,, Glycerophosphates Compound

Strengths:—dr. 1/2 and 2 c.c.* *(sugar-coated)*, in oval bottles of 25 and in bottles of 100

'ELIXOID' Brand Glycerophosphates

In bottles of 4 fl. oz.

TRADE 'ERNUTIN' MARK

(The Synthetic Ergot)

The history of the isolation and investigation of the active principles of ergot, and their scientific reconstruction to produce 'Ernutin,' is one of the romances of pharmacological chemistry. As is well known, the problem of the active principles of ergot had baffled investigators for many years, the whole subject being in a state of chaotic confusion and contradiction, but here again its complete solution was achieved by the collaboration of staffs of the Wellcome Physiological Research Laboratories and 'Wellcome' Chemical Works. Their discovery of the alkaloid Ergotoxine in 1907, followed by that of 'Tyramine' (*p*-hydroxyphenylethylamine) in 1909, and finally by

**This strength is not stocked in the British Colonies or in India, but can be obtained to order*

the isolation of 'Ergamine' (β-iminazolylethylamine) in 1910, laid bare the whole secret of ergot and enabled the Firm to present to the medical profession —'Ernutin'—which has aptly been described as the "essentials of ergot." Of the constituents of 'Ernutin,' the Ergotoxine is prepared from ergot, and the 'Tyramine' and 'Ergamine' are synthetically produced at the 'Wellcome' Chemical Works by methods discovered in the Firm's laboratories. By the scientific assembling of these pure active principles, which represent the whole activity of ergot, 'Ernutin' is produced. 'Ernutin' is, therefore, the only preparation of ergot which can be considered to be standardised in the strictest sense. Its components are the active constituents of ergot, present in scientifically judged and unvarying proportions.

PREPARATIONS

'ERNUTIN' Brand Products

'Ernutin' presents the essentials of Ergot (Ergotoxine, 'Tyramine' and 'Ergamine') in solution.

Issued as follows—

'Ernutin,' in bottles of 1 fl. oz., 4 fl. oz., 16 fl. oz. and *30 c.c., 'Vaporole' 'Ernutin' in hermetically-sealed containers of min. 10, in boxes of 6; and *0·6 c.c., in boxes of 2 and 6

'ERGAMINE' (β-iminazolylethylamine) *(Synthetically prepared)*

'Tabloid' Hypodermic 'Ergamine,' 0·001 gm., in tubes of 12

'TYRAMINE' (Parahydroxyphenylethylamine) *(Synthetically prepared)*

'Tabloid' Hypodermic 'Tyramine,' 0·02 gm., in tubes of 12

** These strengths are not stocked in the British Colonies or in India, but can be obtained to order.*

The words 'TABLOID,' 'ELIXOID,' 'ERNUTIN,' 'ERGAMINE,' 'TYRAMINE' and 'WELLCOME' are trade marks or brands which designate fine products issued by Burroughs Wellcome & Co.

BURROUGHS WELLCOME & CO.
LONDON (ENG.)
NEW YORK MONTREAL SYDNEY CAPE TOWN
MILAN SHANGHAI BUENOS AIRES BOMBAY